

7.9 Square Root Functions and Inequalities

Square root function--a function that contains a square root of a variable

What is the inverse of

$$f(x) = x^2 ?$$

$$y = x^2$$

$$x = y^2$$

$$\pm\sqrt{x} = y$$

$$y = \sqrt{x} \quad \begin{matrix} \text{Limit} \\ \text{Range} \end{matrix}$$

Graph in the real number system.

$$y = \sqrt{2x + 3}$$

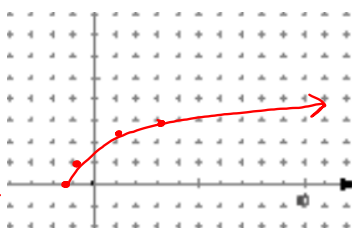
$$2x + 3 \geq 0$$

$$x \geq -\frac{3}{2}$$

$$\begin{array}{r|l} x & y \\ \hline -\frac{3}{2} & 0 \\ -1 & 1 \\ 1 & 2 \end{array}$$

D:
R:

$$\begin{matrix} [-\frac{3}{2}, +\infty) \\ [0, +\infty) \end{matrix} \quad \begin{matrix} x \geq -\frac{3}{2} \\ y \geq 0 \end{matrix}$$



$$y = \sqrt{\frac{3}{2}x - 1}$$

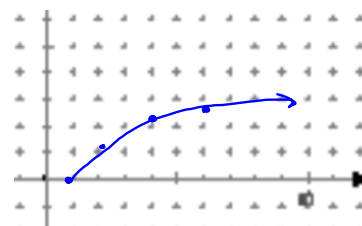
$$\frac{3}{2}x - 1 \geq 0$$

$$x \geq \frac{2}{3}$$

$$\begin{array}{r|l} x & y \\ \hline \frac{2}{3} & 0 \\ 2 & 1 \\ 4 & 2 \end{array}$$

D:
R:

$$\begin{matrix} x \geq \frac{2}{3} \\ y \geq 0 \end{matrix}$$



$$y = -\sqrt{2x} + 1$$

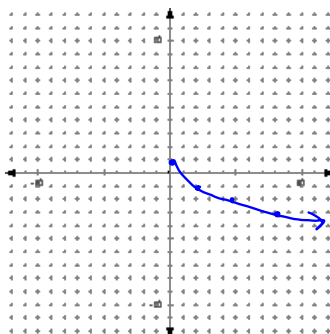
$$2x \geq 0$$

$$x \geq 0$$

x	y
0	1
2	-1
4.5	-2
8	-3

D: $x \geq 0$

R: $y \leq 1$



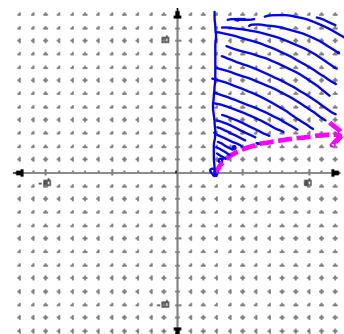
Inequalities

$$y > \sqrt{3x - 8}$$

$$3x - 8 \geq 0$$

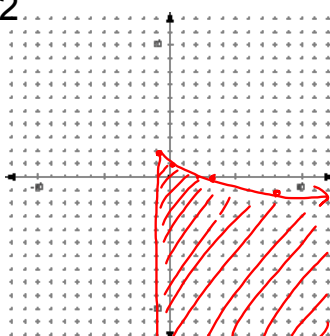
$$x \geq \frac{8}{3}$$

$\frac{8}{3}$	0
3	1
4	2
6	$\sqrt{10}$



$$y \leq -\sqrt{x+1} + 2$$

x	y
-1	2
0	1
3	0
8	-1



HW
p398
15-31 odd